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## Original Articles

### THE BEDFORD MINERAL SPRINGS.

BY WILLIAM F. WAUGH, A.M., M.D.,  
PHILADELPHIA.

NO American mineral water compares in value or in reputation with that of the Bedford Magnesia Spring, while in Europe none rivals it except the Carlsbad. The Bedford spring issues from the rock at the base of the mountain, through an opening three feet long and eighteen inches wide. It discharges water at the rate of a barrel a minute, without any perceptible variation or interruption.

The crystal purity of the water is unaffected by the heaviest rainfall. The water is a calcic magnesian, entirely free from organic matter, and with about one-quarter of a grain of iron to the gallon. It is a gentle laxative, acting specially on the liver and kidneys. Under its use the tissues are denuded of water, the products of

waste and of disease are washed out, while the cellular tissues of the body are strengthened by the absorption of lime into the cell walls. The combination of a depurative agent with a reconstructive is rarely to be found in natural waters, and renders this one suitable for many cases of anemia and debility in which the ordinary salines cannot be employed. On the other hand, the absence of iron renders Bedford water a safe and efficient remedy for those plethoric and gouty persons, who could not take a chalybeate water without danger of apoplexy.

The principal indications for the Bedford magnesian water may be briefly summarized as follows:

1. In diseases of the liver it stimulates the secretion of bile and hastens its outflow.
2. In kidney diseases it washes all obstructing matter out of the uriniferous tubules, increasing the solvent power of the urine and flushing the whole urinary tract.

3. In digestive derangements it stimulates the secretion of all the digestive ferments, and increases the appetite by its depurative action.

4. In all cases where there is a taint of scrofula, syphilis or malaria, lead, mercury or arsenical toxemia, in rheumatism, gout or uricemia, the water washes out of the body the toxic elements, and aids greatly whatever other remedies may be required.

5. In catarrhal affections generally, the action of other remedies is greatly enhanced by the use of this water, relieving congestion and stimulating absorption.

6. In anemic cases, convalescence from acute diseases, debility, atony, and enfeebled conditions generally, the use of this water is beneficial, as it keeps the alimentary canal clear, removes noxious substances from the blood, and stimulates the absorption and assimilation of nutritive elements. It has long been known that iron is rendered more useful by administering salines with it, so that "Dunglison's Saline Chalybeate," and "Flint's Saline Chalybeate," are prescribed by hosts of physicians. The Bedford calcic-magnesian water in connection with iron, forms a most admirable combination for the conditions enumerated in this paragraph.

7. Many nervous conditions, such as neurasthenia, insomnia, melancholy, irritability, headaches, neuralgia, etc., etc., are really due to some one or more of the conditions noted above, and are consequently benefited by this water. But as the pure mountain air is a powerful agent for good in these cases, the benefit derived from the water at home cannot equal that obtained during a residence at the Springs.

8. Those who are well have no need of any medicine. But, setting aside the question of whether perfect health ever exists, many persons are firm in the conviction that a course of Bedford water is useful as a prophylactic. When we find men of far more than average intelligence, who have taken the water every summer for forty years, and bring up their children in the same habit, there is at least reason to inquire into the grounds for their belief. Our fathers claimed that the Lenten fasts and the spring venesection were of use in the same way; and there is a widespread belief that they were not altogether mistaken, and that we have dropped these

measures without sufficient cause. This belief in the efficacy of Bedford water as a preventive of diseases and as conducive to long life, was shared by Simon Cameron, Thaddeus Stevens, and many other notable men. "If I could only get to Bedford, I would be sure of another year," has been the cry of many a habitué of the Springs.

The Magnesia water should in general be taken only before breakfast. A glass should be sipped at intervals, occupying five or ten minutes in drinking it. This should be followed by ten to twenty minutes' exercise, graduated to the strength of the individual. A second glass is then to be taken, if needed, in the same manner as the first. Few persons require a third glass; still fewer a fourth. The object to be attained is to produce one free evacuation of the bowels, and only one, just before or after breakfast. Any action beyond this is to be avoided. The laxative effect of the water is gentle, and must be aided by the influence of habit, the patient going to the closet at the same hour every day. If two or three glasses prove insufficient, it is better to take a pint of mineral water, cold, by enema, with a teaspoonful of table salt added to it. This acts with certainty, and is preferable to flooding the system with large volumes of water. If the water is to act on the bowels, it should be taken cold; if to act rather on the blood, it is best to have the water heated. In all cases it must be slowly sipped; not tossed off at a draught. Under no circumstances should the water be taken at any time after breakfast, unless so ordered by the physician. When the action has been once obtained, the body should have a day's rest before the dose is repeated. Taken at bedtime, the water causes nervousness and insomnia; as at that time the glandular apparatus should be quiet. In cases of gall-stones, much larger quantities of the water are required; as the object is different.

The water of the Pure Spring forms the ordinary beverage of visitors at the Springs, except when otherwise ordered. Being almost identical with distilled water (and purer than most of the distilled water sold), it is of value in flushing the system, in Bright's disease, uric acid diathesis, gout, etc.

The water of the Sulphur Spring contains that element in its most potent

form. This water should never be drank except on the advice of a physician. Sulphydic acid being a protoplasmic poison, the water is destructive to the blood cells and breaks down tissues. For this reason it is a valuable remedy in plethora, obesity, and in the treatment of scrofula, syphilis, skin diseases, and suppurations. Externally, it has acquired quite a reputation as a beautifier, removing blotches, pimples, etc., and rendering the skin white and smooth. It is also of value as a bath for rheumatism, gout, and the affections for which its internal administration is commended. The sulphur water should be drank in smaller quantities than the magnesian; half a glass some time before breakfast and on going to bed, being the usual method of taking it. But as this water contains nearly as much magnesia as the great spring, it is probable that the dose of the former also should be taken in the early part of the day. This water is of considerable value for baths; and in all the affections for which it is indicated, it should be also employed externally.

Whether tubercular affections are benefited by sulphydic acid or not is still an unsettled point.

The water of the Chalybeate Spring contains about half a grain of iron carbonate to the gallon. It should be drank *ad libitum* by those who require iron. It is very pleasant to the taste, and is an excellent adjuvant where more powerful chalybeates are required. But small as is the amount of iron in this water, its effects when drank for some weeks are quite marked. It is also employed with advantage as a bath.

The "Cold Spring" is so heavily charged with calcic salts as to render it unsuitable for ordinary use; but for those who need lime, it should be used habitually as a beverage, in connection with the magnesian water. Nursing or pregnant women, and those suffering from wasting diseases, may drink this water with advantage. Scrofulous children are especially benefited by it.

Besides these, there are nearly 100 springs on the Bedford property; the constituents of which are unknown. From the remarkable variety found in the waters already analyzed, it is possible that the others may contain elements of value. Traces of lithia exist in the magnesia and the sulphur waters, and this valuable

element may be found in larger proportion in the other springs. The "Black Spring" bursts out from under the roots of a huge oak, on the mountain side, and pours forth a stream of pure water sufficient to supply all the wants of a town of 10,000 inhabitants. It has been proposed to utilize this stream to run an electric plant, for lighting the hotel and operating an electric street car line connecting the hotel with the town.

#### MODERATE AND MILD vs. STRONG CURRENTS IN ELECTRICAL APPLICATIONS.

BY W. H. WALLING, M.D.,  
PHILADELPHIA.

THE forces of nature act, as a rule, in a gentle, and scarcely perceptible manner. When, however, any violent disturbance takes place, the reaction is as marked as the excitant form, and in some instances, seemingly, more so. This is nowhere more apparent than in the application of the electrical current to the delicate structures of the human body. The advocates of intense currents were greater in number at a not very remote period than, fortunately, they are at present. The imitators of Apostoli—and their name is legion—frequently insist upon giving powerful currents simply because that famous man once did the same, and probably for no other reason.

Whilst I do not condemn very strong currents when really indicated, yet, as a rule, I do condemn them.

What constitutes a strong current in gynecological application? One will say, two hundred and fifty milliamperes; another, one hundred and fifty; another, five hundred milliamperes must be reached before it may be classed as being very strong. For my part, I draw the line far below any of them. In fact, I have seen reported cases where fifty milliamperes was strong.

The strength or intensity of the current must be in exact proportion to the needs of the case, whether it be one milliampere or one hundred. It only one milliampere is indicated, two milliamperes would be strong for such case, and this is to be determined by a previous examination and diagnosis, not only physically, but electrically. Just as it requires practical skill in order to make a proper physical

diagnosis, just so it requires an especial training and experience in order to make a proper electrical diagnosis.

In all my practice in the treatment of fibroid tumors, I never exceeded one hundred and twenty-five milliamperes, intra-uterine application, and I reached that limit but once only. All of my applications, aside from that single instance, were made with currents not exceeding seventy-five milliamperes, and generally, with an intensity of but thirty to fifty milliamperes. And I gained good results. Cases that showed either very severe reaction, even to peritonitis, under other operators, who used one hundred and fifty to two hundred milliamperes, not only showed no untoward symptoms under my moderate treatment of thirty milliamperes, but made substantial progress in the right direction.

It is not, however, in the gynecological field alone that good results are obtained by moderate currents. Many, if not most, neurological cases do far better under mild applications, than under even what most would consider moderate currents.

I might cite case after case that has come under my observation and treatment, but shall confine myself to but two from each class—gynecological and neurological.

Mrs. B., aged forty years, had been under treatment for a fibroid enlargement of the uterus, for quite a period, and had been receiving a current intensity of one hundred and fifty milliamperes at each sitting. This was followed by days in bed, suffering from what appeared from her statements to be peritonitis. There was but little, if any, diminution to the tumor. In fact, so great was the reaction after the heavy currents used, that the wonder was that the tumor did not actually increase in size. Coming subsequently under the care of the writer, she was given but thirty milliamperes three times per week, resulting in great amelioration of the symptoms, and gradual reduction of the tumor. The desirability of moderate, or even mild currents, was fully demonstrated in this case.

Mrs. C., aged thirty-eight years; mother of two children; since the birth of the second child she had suffered from an increasing fibroid enlargement of the uterus. She was pronounced incurable by a prominent gynecologist. Without going into details, suffice it to say, that after about eight months of intra-uterine applications, with a current intensity not exceeding thirty

milliamperes, she was entirely cured. The uterus became normal. This statement was verified by another prominent gynecologist, who examined the patient at my request, without knowing her previous condition.

J. K., aged thirty years; laborer; suffering from locomotor ataxia, the result of exposure and excesses. Both the galvanic and Franklin currents were used in this case, and mild, descending galvanic applications, not exceeding five to ten milliamperes, gave more relief than stronger ones. Also, contrary to most text books, a mild spark, one-quarter to one half-inch in length, gave better results than stronger ones. He improved steadily under the mild applications.

G. F., aged forty years; engineer; suffering from lateral spinal sclerosis. Spastic gait; knee jerk enormously exaggerated; contraction of flexor muscles of both legs; toes drag on the ground, and can scarcely get his heels to the pavement. Has been under medical treatment for a long time. Came under the writer's care in December, 1890. Careful electrical examination pointed to mild, descending galvanic currents, and but five milliamperes were used for a long time; treatments being given three times each week, during the winter. There was marked improvement. During the summer the applications were discontinued, but resumed in the fall and continued quite steadily, some weeks the patient receiving treatment every day. In December, 1891, thinking to push matters faster, and in deference to the opinion of others, a current of fifty milliamperes was given for one or two minutes upon two occasions. The first application of this intensity produced an apparent remarkable improvement, the patient saying that he had not walked so well in years. The second strong treatment operated in directly the reverse manner. He was injured, seemingly, beyond repair, and I never succeeded in bringing him up to the good condition he was in at the time of the first strong application.

The question was asked me, "What good can you expect, in such a case, from so insignificant a current as five milliamperes?" My reply was, "I know from the excellent results obtained." It is results, good results we strive for, in all our treatments, and when five, three, one, or even one-half a milliampere give me good

results, why should we jeopardize the case by attempting more?

Dr. Sperling, a translation of whose paper appears in the *Journal of Electro-Therapeutics*, for July, 1892, reports a case of locomotor ataxia where very mild currents of galvanism gave most excellent results after strong currents had been used to great disadvantage. Also, other cases of differing complaints, where currents of one half and one milliamperere for one minute gave satisfactory results.

Such doses of galvanism seem, to most operators, as being so very small as to be practically worthless, but when we consider that there is voltage, amperage, and sufficient coulombs behind such current to force it through the resistance offered by the body, we get an appreciable quantity and intensity, and if it be enough, as it is in many cases, to get the desired effect, it is the proper current to use.

The great nervous centers, in many persons, are very susceptible to the effects of the electric current. They are adversely affected in many conditions, reflexly, by strong electrical applications to remote parts of the body. It is true, also, that many persons will sustain heavy shocks from a dynamo without apparent injury, but we are dealing with pathological conditions in the application of medicinal electricity, and we should be very sure of our ground before entering upon it. I cannot too strongly emphasize the absolute necessity of all beginners using very mild currents, when using electricity upon the sick.

#### DOSIMETRIC MATERIA MEDICA.

BY CHAS. EVERETT WARREN, M.D.,  
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**ACID, ARSENIOS.**—A re-constituent of the blood. Indicated in palustral diathesis and rebellious fevers with anæmia, engorgements of the portal vein, in hypochondriasis, and all states of the system where there is an impoverished blood supply; in affections of the skin, resultant from a dyscrasia; in ataxic and adynamic fevers, in typhus and typhoid fevers, pernicious fever, cholera, yellow fever, the plague, etc.

In acute cases, one granule should be given every half hour until the cessation of the febrile conditions; in chronic cases, ten to twenty granules daily.

As arsenious acid increases the oxygenation of the blood, it may be given conjointly with the arseniates of iron, soda, antimony or potash, in dyscrasias and chloro anæmia. For the same reason it is useful in combination with strychnine or quinine in rebellious and indolent fevers.

In pyrexia, one granule every half hour is indicated to cessation of fever; in dyscrasias, up to twenty granules a day.

*Acid, Benzoic.*—Possibly useful in affections of the urinary passages; but on account of its slight solubility, the salts (benzoates, q. v.) are preferable. It increases the urinary secretion. Ten to twenty granules a day.

*Acid, Phosphoric.*—Indicated in sclerosis, amblyopia, etc., conjointly with strychnine. Ten to twenty granules a day.

*Acid, Salicylic.*—Indicated in zymotic affections, counteracting putridity and ataxia, especially in gangrene, typhus, etc. Ten granules a day, two at a time, every hour.

*Acid, Tannic.*—Indicated in mucous relaxation as an astringent. Ten to twelve granules a day.

*Aconitine.*—A sedative, acting on the vaso-motor system. Indicated in pyrexia, to reduce increased body heat; to the physiological mean, one granule every quarter or half hour, according to the severity; in congestive lesions of the respiratory and circulatory systems; in renal hyperæmia, conjointly with digitaline; in congestive spasms; in irritative lesions of the skin; in neuralgia and rheumatic affections against pain and irritative congestion.

It is a substitute alternative for veratrine, (q. v.); one granule every hour or half hour to sedation of symptoms.

*Antimony, Arseniate.*—In addition to the properties of arsenious acid (q. v.), this salt acts especially upon the bronchial mucous tissue, and is therefore indicated as a re-constituent and expectorant in chronic bronchitis and pneumonia, and in pulmonary tuberculosis. It is also recommended in organic lesions of the heart. Like all arseniates, it increases nutrition and sanguinous oxidation.

*Apomorphine.*—An emetic indicated especially in children, in bronchitis and pneumonia. One granule every half hour.

*Asparagine.*—Of slight activity, but in a degree a substitute for digitaline and colchicine. Indicated in affections of the urinary passages, and as a diuretic in

anasarca, albuminuria, etc. Ten to twenty granules a day.

*Atropine*.—A sedative of the muscular system. Indicated in acute or tonic spasms, tetanus, hydrophobia, photophobia, misere, ileus, and internal or external constrictions, in internal spasms, cardialgia, gastralgia, enteralgia, cystalgia, and angina, especially as a preventive of the angina of scarlet fever, sequé-lant or concurrent; in neuroses, hysteria, epilepsy, etc. See hyosciamine.

*Atropine Sulphate*.—Same indications and same doses as atropine.

*Atropine Valerianate*.—This happy combination of valerianic acid and atropine is better than the plain atropine, daturiné, or hyosciamine, in the neuroses already cited, epilepsy, chorea, hysteria, etc. Given in the same doses.

*Benzoates (Lithia, Ammonia, Soda)*.—These have the quality of the acid but are more soluble and, therefore, better for neutralizing the acidity of urine; thus rendering it neutral. The salt of ammonia is preferable in typhoidal affections, while the lithis and soda are indicated in uræmia in doses of ten to twenty granules per day.

*Bismuth Subnitrate*.—An astringent whose prolonged use in massive doses may induce colic or gastritis, or even gastro enteritis. Indicated alike in gastralgia and enteralgia. It should always be combined with morphine, codeine, camphor, monobromate, or croton chloral.

*Brucine*.—Excitant of the muscular system, especially advantageous for children. Indicated in capillary bronchitis and pneumonia in its first and last stages to favor expectoration and prevent paralysis; also in nocturnal losses due to weakness. When there are concurrent spasms atropine is indicated, one granule every two hours. See strychnine.

*Bryonine*.—May possibly relieve torpor of the large intestine acting especially upon the cæcum and thus favoring digestion. Six to eight granules a day when the stomach is oppressed, especially in hypochondriasis. It may be given with advantage in conjunction with jalapin, one hour after meals.

*Cafeine*.—A brain and cardiac stimulant indicated in cerebral torpor and in accidental lesions, sunstroke, coma, somnolence, and nervous migraine of an exhaustive type and in "brain fog." One granule every half hour.

*Cafeine Arseniate*.—Stimulates the stomach and brain, and thus indirectly acts upon the entire economy. Indications same as for cafeine (q. v.), but in smaller doses on account of the arsenical element which renders it more active as a reconstructive tonic.

*Cafeine Citrate*.—More soluble than the pure alkaloid it is more efficacious, efficacious in the same indications, especially in cephalic congestion, migraine, etc. Five to ten granules every half hour.

*Cafeine Valerianate*.—Preferable to plain cafeine, citrate or arseniate, in the treatment of migraine associated, if desired, with the arseniate of cafeine, with quinine, rendering its action more powerful.

*Calabarine, Sulphate*.—Contracts the pupil, and is indicated for this reason as an antagonistic to toxic effects of atropine, daturine, and hyosciamine.

*Calcium, Sulphide*.—Is specific in diphtheria and croup, given in doses of ten to twenty granules a day, according to age.

*Calomel*.—Acts as a solvent of fibrine, of the blood, in inflammations, especially serous, indicated in meningitis, pleurisy, carditis, pericarditis, etc. Being but slightly soluble it may progressively accumulate in the system, especially in the liver, and thus lead to destructive results. Salivation, with its terrible results, cries caution in its use, a danger which is avoided in dosimetric exhibition, especially when combined with neutral sulphate or magnesia as a mild and harmless cathartic. Calomel is indicated in dermatoses, especially of the dry type, lichen, dartus, etc. The dose should not exceed ten granules a day.

In children it is useful as a vermifuge, four to six granules a day, according to age.

*Camphor Monobromate*.—A sedative of the genital system, preventing nocturnal pollution, in conjunction with atropine, one granule of each every hour. In satyriasis, nymphomania, hysteria, and the like, twelve granules a day.

*Chloral, Croton*.—Sedative and anesthetic in conjunction with iodoform (q. v.).

*Cicutine*.—Sedative in abnormal sensibility and contractility. Indicated in affections of the spinal cord, with reflex action, in intercostal neuralgia, angina, dental pain, otalgia, and pain of cancer. It quiets and regulates the circulation. One granule every half hour in acute

lesions; one granule every hour in chronic cases.

*Cicutine, Hydrobromate.*—Especially advantageous in tuberculous meningitis. Decreases fever and is a sedative to the nervous system without the reaction of morphine. It may be safely used in diseases of children with hyperæsthesia. One granule every half hour in acute cases; four, six to eight or ten granules in chronic cases per day.

*Cocaine.*—A nervous excitant and stimulant, with a concomitant sedative action, analogous to caffeine, guaranine, etc., indicated as a gastric tonic in apepsia, dyspepsia, chloro anæmia, etc., one to five granules every hour.

*Codeine.*—An excellent sedative of the nervous system, especially in peripheral irritation, without the reaction of morphine. Indicated in irritation of the primary passages conjointly with iodoform (q. v.). Four to six granules ordinarily suffice as a sedative.

*Colchicine.*—A diuretic and supstitutive alternative for digitaline (q. v.) indicated in acute rheumatism and gout; one or two granules every half hour in acute cases; ten a day in chronic.

*Colocynthis.*—A tonic laxative, acting on the small intestine. Indicated in all cases of sluggishness or atonicity of the intestinal tract, alone, or in combination with jalapine, bryonine, cyclamine, euonymine, elaterine or podophylline. All of these agents demand the exhibition of a vital incitant or reconstituent. Four to eight granules a day should be given.

*Cubebine.*—The peppers have a very heating action which makes them efficacious in the treatment of acute bienorrhagia. This action is common to the whole plant and not alone to any one of the extractive principles. Cubebine has this quality in a small degree only, even when given in doses of twenty to thirty granules a day. Its action is more marked on the urine, rendering it more alkaline and fluid, and therefore less irritating, on account of increased transudation from the genito-urinary tract. To produce any effect as many as fifty granules a day must be given. It does not cause colic or diarrhoea like copaiba, which also produces an eruption, and is favorable to the resolution of certain diseases, notably suppurative bronchitis when it has reached a stage where phthisis is imminent.

*Cyclamine.*—Laxative in small doses, purgative and even drastic in large doses; recommended in constipation. *Vide* colocynthis and elaterine.

*Daturine.*—A substitutive alternative for atropine and hyoscyamine (q. v.). Same indications and same dose.

*Diastase.*—Indicated in apepsia; three or four granules a day, at meals, twelve a day.

*Digitalin.*—The heart sedative *par excellence* and a regulator of the system in general; it increases diuresis by diminishing intravascular pressure. The action of digitalin should not be confounded with that of digitalis, since the latter may be fatal in its effects, causing paralysis of the heart and anæmic vertigo of the brain. Amorphous digitalin is more violent in its action than crystallized digitalin, which has a purely physiological action, sedative and regulative. It is therefore especially indicated in that state of vascular erethism which precedes and accompanies inflammation. It is also useful in organic maladies combined with metallic preparation, iron, arsenic, etc., or with a metalloid, iodide, bromide, etc. In acute cases one or two granules are indicated every half hour until the pulse decreases in rapidity and the morbid caloric is decreased. In chronic cases four to six granules a day may be given.

*Elaterine.*—This is indicated as a hydragogue, especially in essential hydropsies. The dose is eight granules, upwards, a day, alone or combined with digitalin (q. v.), the dose of which should not exceed four granules a day.

*Emetine.*—The active principle of ipecac without its violence and without contrastulant qualities. It is a preferable substitute for tartar emetic, the boat in which so many victims have been ferried over to the other shore, that Guy Patin suggests the name "tartar stygian." Emetine is indicated when there is embarrassed respiration, in capillary bronchitis, and in pneumonia, whether at the beginning to decrease the fever or at the end to favor expectoration.

*Ergotine.*—Does not have the dangers of crude ergot, which, similar to poisonous mushrooms, produce gangrene of the feet and toes. Black coffee happily counteracts this danger in a degree, and we find the eaters of ergotized rye free to a certain extent from the deleterious results. The emenagogue action of ergo-

time is very marked, congesting the uterus as it does, and thus preparing it for the menses. In prolonged use in amenorrhœa it may begin with twelve granules a day. In dysmenorrhœa it should be given with hyosciamine, and sometimes cicutine.

*Euonymine*.—Laxative, diuretic and expectorant; indicated in dyspepsia accompanied with constipation. It is also recommended in intermittent fever and in pulmonary affections.

*Gelsemine*.—A nervous vaso-motor sedative, similar to aconitine, having antipyretic properties. Indicated in odontalgia and neuralgias of all descriptions (facial, intercostal and sciatic). One granule every quarter or half hour.

*Gregory Salt*.—A combination of codeine and morphine, combining the qualities of the two alkaloids. An excellent sedative for the night. It is indicated in doses of four to six granules, by twos at half hour intervals.

*Guaranine*.—Has relatively the same properties as caffeine, theine and theobromine, cocaine, etc., that is, a tonic stimulant; in addition it is slightly valuable as an astringent in diarrhœa.

(TO BE CONTINUED.)

ASIATIC CHOLERA.—Dr. R. W. Mitchell has had success with the following (*Memphis Med. Mo.*):

R.—Acidi sulphurici dil. . . . . ʒss.  
Morph. sulphat. . . . . gr. ½.  
Spts. vini gallici. . . . . ʒiiss.  
Aquæ destillatæ. . . . . ʒiiij.

M.—Sig. Inject under the skin of the arms, legs, and over the stomach every hour until symptoms of the disease are relieved.

—*Med. Review.*

PHYSICIANS NOT AMONG THE MILLIONAIRES.—A recent and interesting feature in one of the daily newspapers of New York, was a list of the millionaires of the country. A friend who looked over it with care, says that he did not find the name of one practising doctor in the list, while many lawyers figured there. The names of clergymen and physicians were conspicuous by their absence. Much as is said by some rich and well-to-do persons and witty journalists, about the enormous fees received by consulting surgeons and physicians and specialists, these fees

in reality do not at all compare with those obtained by lawyers of like reputation and rank. A successful man in medicine, whether eminent or not, may only expect a very good living, such as is obtained by the well-to-do people of his vicinity, together with the ability to leave a moderate resource for his family.

But, in order to accomplish this, the doctor must not die in early middle life. A man who does not live to be fifty-five or sixty years of age, and depends alone upon his practice for an income, does not ordinarily leave anything for his family. It is a fact that physicians' fees, however high they may seem to a jury of day laborers or clerks, are usually very low, when the time and money spent in acquiring an education and skill, and what is otherwise involved, are considered.

Laymen cannot easily be made to realize that the vast majority of physicians give from one-third to one-half of their professional hours of work for no direct pecuniary return. Of course, there are a few men here and there, who do nothing of this kind, but where is the reputable country or village practitioner that does not give his services without fee, right and left, whenever those in bodily pain or anguish call for him? In cities and towns, the proportion of time given in gratuitous service, not only to the poor in dispensaries and hospitals, but also in private practice to the "respectable" poor, decayed gentry, and so forth, is also very large. May it ever be so. *Noblesse oblige*. Let us never grumble at this part of our lot, but let us abate nothing of just demands for our services from those able to pay us, whether they are willing or not.

Within the present year, the wife of a prominent city official who gets ten thousand dollars a year salary, appeared at one of our public institutions, where the poor, and the poor only, are given medical care, with her child, for whom she sought gratuitous advice. The applicant answered the usual questions, which are carefully asked, as to her husband's income and occupation, before she obtained a ticket. Of course the questions were not honestly answered. It was only because the attending surgeon of the outdoor department found the case a serious one, requiring hospital care, that the mother, being frightened, confessed that she was able to pay if attention could be given at her home.—*The Post-Graduate.*



# The Times and Register

A Weekly Journal of Medicine and Surgery.

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## MEDICAL PROFESSION AND POST-GRADUATE EDUCATION.

FROM time to time of late years, particularly about this season, inquiries are made of us as to the best school to enter to pursue a course of post graduate study.

Modern science and the enormous stride of modern research have so extended the scope of the different branches of medicine, that the graduate of but a few years since is almost nowhere when he looks about him, and sees the old landmarks of his time so rapidly fading out of sight to make way for those which are rapidly occupying their places.

To the wide-awake, progressive practitioner, who is not content to follow in the furrows of the past, but is ambitious to keep abreast with the times, an occasional "brushing up," dissection on the cadaver, microscopical examinations, analysis of the animal fluids, and attendance on clinics, medical and surgical, are quite indispensable.

But to what city, what section of the country, and to what hospital shall he go?

To the general practitioner, we say, go home! Or, perhaps, to make it more clear and emphatic, we repeat, go to any hospital or college which have an ample corps of teachers and plenty of clinical material.

The learned veteran, now passing close to the meridian of life, finds it wholly useless, even though it were possible, to sit on the benches to hear lecturers talking against time.

He wants to attend all the clinics he can; perhaps walk the wards, and do some quiet laboratory work and little else.

There is no good reason why all clinics in every city should not be free, and always open to any regular graduate in medicine, without a farthing's expense.

And, as a matter of fact, this is practically so in this country.

Every possible facility is extended in foreign countries, in the hospitals, to visiting physicians to attend clinics, and in some of the largest hospitals in Europe one is free to walk the hospitals until he is tired, without let or hindrance. Go then to Philadelphia, New York, Chicago or Boston, attend the clinics and take a course in laboratory work. Of course, to one who is about to qualify for a specialty, he must intimately associate himself with his teacher, and arrange for years and not a week's sojourn at special operations.

## Letter to the Editor.

REPLY OF DR. BLACKWOOD TO DR. SANGREE'S LETTER OF THE 20TH INSTANT.

IT would have been better for Dr. Sangree to have definitely referred in his first complaint to the battery condemned in his strictures, in the first place; and thus not have reflected on other makers of dry-cells; and in the second to have answered what I did say (if not agreeable to himself), instead of trying to put words into my communication which I did not say, because the readers of THE TIMES AND REGISTER have only to take the two numbers up to see that no such language was used by me as that ascribed by the Doctor when he writes, "it is not every practi-

tioner that is able to afford a room full of them, *a la* Dr. Blackwood, in order to pick from the lot that which is best." My office is so arranged as to convey the idea that it is simply a parlor or reception room, and it is free from all advertising in the shape of machinery or professional traps on tables, book-cases, or other furniture. I have many times referred in articles to what I use in the shape of mechanism, and to allay any apprehension on the part of my friend in this direction, I may say that my main office battery consists of one hundred and fifty Leclanche cells; with these is arranged a set of a hundred more for experimental work, these being in the cellar; the whole is so managed by a switch-board as to allow any number from one to the maximum to be used for any desired purpose. Then comes a set of four differentially built faradic coils, one simple coil and a static machine, that is all; it leaves lots of room for my patients and myself to amuse ourselves, or to transact such business as may properly come before us. For portable use, I have four galvanic and one faradic, all chloride of silver.

I said in my letter that I did not know the exact construction of the new cells, and that I would anatomize one or two at my leisure. The makers of the apparatus have very courteously placed their factory at my disposal for study and observation, and through their representative, Mr. H. G. Ensor, they sent to me a number of cells for experimenting. With the utmost candor and fullness the gentleman named answered all my queries concerning the matter; he volunteered much that I did not look after; in short, no one could possibly be more open, more candid, or more explicit than Mr. Ensor was, and I am now able to say a good deal that heretofore I could not, and all of it in favor of the apparatus. As I said, one reason for the change from hard rubber to the new style was in the interest of economy—the rubber was unnecessarily expensive, but the main factor was to overcome the difficulty of sealing the cells air and water-tight; this was impossible with the rubber, as I know from experience myself. Now, the cells have four separate seals inside, and when thus fixed they are wrapped with a coat of yellow wax and a little paraffine (I think), as I do not recollect the exact formula which Mr. Ensor gave me. The cell is of glass, rather thicker than

that of test-tubes; it is  $2\frac{1}{2} \times \frac{5}{8}$  inches; in the faradic blocks this glass cell is enclosed in a brass cylinder, much like a cartridge shell; in the galvanic boxes it is wrapped with the waxen compound, and it is absolutely tight.

The electrodes are a bar of fused chloride of silver, and one of zinc; the electrolyte is essentially a paste of zinc-sulphate. The resultant of decomposition is metallic silver. The electro-motive force carefully measured is over one volta per cell—seventy-nine for fifty in good order, having been used for some three hundred hours before testing. I dropped a cell without the brass cover to the carpet from a height of three feet, without its breaking; then on to the bare floor from the same distance, when it cracked. Next I laid a weight of ten pounds gently (but thoroughly) on a bare glass cell for an hour, and it did not break. I short-circuited two cells by twisting the terminal wires firmly together, one in the brass case and the other without that cover; in one hour the bare cell showed a slight rise in temperature, but the wax which I wound around one end was still quite hard. The one in the brass cover showed no apparent change. Then I unwound the wires of each and coupled them together in series, and replaced them in a box for protection. In an hour they were both warm, the glass one especially (because of direct conduction). In three hours there was visible destruction of the silver bar, particularly in the track of the fine silver wrapping-wire; evident leakage showed at the outlet of the silver wire on the plaster cover; there was gas collected at the top of the pasty electrolyte. In six hours all these signs were multiplied, and then it being bedtime, I left the cells till morning, when the bare glass cell was found cracked and worn out. On removing the other from the brass cover, it was also worn out, but not broken. Twenty cells coated with wax and short-circuited, similarly were broken up in six hours, and the wax very much softened, but I did not perceive them to melt whilst looking at them, as Dr. Sangree hints his did. This number, of course, generated a powerful current, but it took the time indicated to wear the lot out; the glass was broken in one-third of the number only. What the actual temperature was during these tests I do not know, for I did not care to expose my thermometer

to the shock, and I was away from the box at the instant of fracture. It is, however, evident that twenty or more cells short-circuited together would melt the wax and destroy the glass. When wrapped in the wax a fall might break the glass if hard enough, but the wax could not melt unless exposed to a high heat—over one hundred and sixty Fahrenheit.

A cell within a circuit of one hundred ohms resistance worked for seventy nine hours and was still active; another through a resistance of five hundred is still in good shape, after two hundred and ten hours; other tests in progress (resistance of a thousand and twenty five hundred ohms) for now more than three hundred and eight hours have not been terminated—the cells are to wear out before reporting. This is enough to satisfy any unbiased man in medicine or any other matter wherein electricity is used; no other cell in existence, dry or wet, will do this amount of work, particularly in the so called "dry-cells." No wet cell on earth, whatever its character, will run half the time, and it steadily polarizes from the moment of starting till it falls to zero—the chloride of silver keeps its voltage up to the last kick, when it expires.

I saw a chloride battery fall into the trench at Fifteenth and Walnut streets on top of the conduit, some years ago—the distance being about ten feet—and it was uninjured. The criticism of Dr. Sangree as to the knife turning at the first cut is apropos, but inversely to his view; all other batteries turn at the first moment, growing less powerful, till they are useless in a very short time—usually less than one hour; the chloride of silver keeps on for six hundred or more hours with uniform pressure and quantity, and then takes a rest which is well-earned, assuredly. The cells alone then need renewal—all the other parts being as good as ever, but in all the other makes the whole business is good for nothing when the cells give out, because bichromate and other acid electrolytes are corrosive. Every doctor who uses electricity thoroughly knows this to his cost. I am surprised to hear that my friend, Dr. Newman, holds the opinion given by Dr. Sangree, for in the work which that eminent man has so well illustrated—that of curing the worst strictures by electricity—the essential is a steady and uniform current, and this we

get absolutely with the chloride of silver cell, and with no other. The electro-poison jumps frequently two to three ma. at a time, up and down, as the hydrogen leaves the cathodes, and this is very bad in cases demanding very mild handling. All the same, if Dr. Sangree is satisfied with this vicarious support, no one else is concerned in it. Several thousand owners hold contrary opinions.

It is perfectly true, as Dr. Sangree says, that much money has been uselessly expended on dry-cells; not one that I ever saw, aside from the chloride of silver, is worth a cent, and one gentleman who hastily endorsed a particular style has told me that he would give five hundred dollars to be able to withdraw his testimonial.

Any one with some little mechanical ability can renew these glass cells, so far as the elements go, and seal them pretty securely with several materials, as I have found by trying. Of course, we can't use the patented seals. I don't know whether the use of glass tubes is patented or not, but I should think that would not be the case. It is, however, more expensive to do this than to send to the makers. I have tried nitrate of silver bars with several electrolytes—starch and zinc sulphate; gelatine with glycerine and zinc sulphate; these gave fair results; many others can be used, for galvanism is easily developed, although not always cheaply or in a cleanly manner.

I have no interest at all in this style of cell, beyond knowing it to be the better of all extant for my use, and, although I have stock in some electrical ventures and certainties, I own none in medical manufacturing concerns, hence I am not biased in this way, anyhow. I say freely what I think about any or all makes, and solely in the interest of those who, like myself, want the best. The courtesy which the gentlemen of this company have shown me is, I believe, open to all who are interested in electrical matters if they are capable of appreciating facts, and what I have said, be it well or ill said, is written with respect for the opinion of all, and not with any desire to claim undue expertness, beyond that held by many workers in this branch of physical research.

I enclose specimen cells with and without the cover; one with the glass removed, in normally good order; another with glass broken away, showing the

effect of short-circuiting for two hours—it is totally destroyed as to anode, cathode electrolyte, and the entire cell, aside from its sealing.

Although not connected with this little friendly skirmish, I wish to correct a typographical error in the second sentence of the last paragraph of my article on Gynecology, in the issue of the 20th inst. The word "no" was omitted. The sentence should read: "It has now gotten to the point of asserting that *no* one has a right to use the sound or speculum, do a laparotomy (or, what is better for the ripper, not the patient, send for an expert in this business), and then you can see what is wrong, even if you can't cure it by the section."

PHILADELPHIA.

## The Medical Digest.

**TREATMENT OF APPARENT DEATHS FROM DROWNING.**—Laborde (*Rev. Gen. de Med.*, July 20, 1892;) reports that in two cases of submersion in which the patients seemed to be dead, he used the following procedure, which he is in the habit of employing on the animals in his laboratory. It consists in seizing the tongue, pulling it out of the mouth, and making rhythmical traction on it. This is followed in the first place by reflex hicough, then by spontaneous contractions of the diaphragm, and finally by re establishment of circulation and respiration. As an adjuvant to this procedure the application to the epigastrium of cloths soaked in very hot water, even at the risk of burning the skin, is found useful.

—*Brit. Med. Jour.*

**SALINE ENEMATA IN ACUTE ANÆMIA.**—P. T. Neustube (*Vratch*, No. 20, 1892,) recommends rectal injections of a physiological saline solution as a convenient, easy, harmless, and efficacious substitute for intravenous, intraperitoneal, or subcutaneous (see *Epitome*, May 21, 1892, p. 459), transfusion in cases of acute anæmia due to *post partum* hemorrhage. He dissolves a teaspoonful of common salt in a bottleful of tepid water, and injects the whole in the rectum, taking the usual precautions for preventing reflux. The author employed this simple procedure in five cases (three in hospital and five in private practice), every one of the women

making good recovery. One of the cases was an abortion in a patient suffering from typhoid fever with diarrhoea. Contrary to the expectations of the author's colleagues, she retained the injected fluid perfectly well.—*Brit. Med. Jour.*

**ATRESIA AFTER LABOR.**—Petit (*Ann. de Gynec. et d'Obstet.*, May, 1892,) read this case at the recent meeting of the Congrès Français de Chirurgie. A woman was in labor which proved lingering. The practitioner found an obstacle in the vagina and divided it with a bistoury. The labor was completed by forceps. A few months later Petit examined the patient. About two and a half inches from the vulva a cicatricial stricture was found. It was cylindrical, with a narrow central canal. A probe passed up the canal entered four-fifths of an inch higher, into a wide cavity. The menses had become scanty, and after each period the patient felt increase of a weight in the hypogastrium. A large abdominal tumor was discovered by Petit. Hæmatometra was suspected and the canal in the stricture was dilated. Symptoms of peritonitis set in, and abdominal section was performed. A large sac was found, it was opened, and a litre (1.79 lb.) of pus escaped. The sac was cut away as far as possible, the remainder being sewn to the abdominal wound and drained. Later the stricture of the vagina was incised and dilated. These operations were performed many years ago. The patient is now in good health.—*Brit. Med. Jour.*

**HYGIENE AND THE PHYSICIAN.**—The great responsibility of the physician makes it necessary for him to protect himself, as far as possible, against failure in the practice of his profession; and, in order to do this, he acquaints himself with all the remedial agencies within his reach. He knows the standard remedies of the dispensaries, and the essential service of hygiene as an indispensable adjunct in the treatment of the sick. This paper, then, attempts to speak of hygiene from the standpoint of the physician rather than that of the professional health officer, and it is the aim only to treat the subject in a familiar way, leaving technicalities to those capable of writing learned theses in a scientific manner.

The meaning of the terms hygiene, health, and disease, as defined by the

authorities, is well-known, of course, by the practising physician. But the application of hygiene in the treatment of the sick is more than the simple meaning of the word. In respect to health itself, one of our most respectable authorities says that the state of the human person said to possess health is very difficult to explain, since no persons are known to possess it in the degree of perfection; and that if an examination was made of the bodies of the healthiest persons, it is doubtful if one among all of them could be found in which there did not exist one kind of lesion or another. The boundary line separating health from disease might be accurately described, if there were persons within reach who were up to the standard of what is credited as perfect health. But, as it is, these states called health and disease seem to merge into each other, and therefore we accommodate ourselves to existing conditions, and do the best we can.

Doing the best in his power for his patients, the doctor not only administers medicines, but at the same time employs all the advantages afforded by hygiene for their restoration to health—that is, that degree of exemption from disease they have been accustomed to enjoy. In doing this service for his patrons, possibly the more hygiene the better. The physician, however, in the practice of his profession, is not so much concerned in the art of preserving health, as he is in the art of conducting the sick back to their accustomed vigor by the employment of sanitary means and methods. In his treatment of the sick, the intelligent doctor knows that the degree of vital force in possession of his patient at the time he makes his diagnosis, furnishes reasonable grounds for a favorable or unfavorable prognosis, so that he does not depend alone on medicine, but wisely makes the best terms he can with nature, to aid his efforts and bring a safe recovery.

It is assumed that every practitioner of medicine has in view the welfare of his patrons, and that money is not alone the spur to his exertions. Money he must have; a reputation he must secure. But the desire to conduct his patients to a safe recovery is strongly fixed in the minds of physicians, as far as we know, and seems to be a ruling characteristic. And it may be safely said that all doctors feel more or less depressed when a patient dies. Repu-

tation certainly has something to do with this; but an interest akin to the humane has more to do with it than reputation has. This statement is made as the result of observation. A case in hand illustrates it. Dr. S— was called to see a lady living two miles in the country, who was supposed to be suffering from malarial fever of a mild type. But she grew worse, and one morning, shortly after the doctor was called and made his first visit, I met him on the street, when he told me of the unlooked-for death of his patient, and added that he was so much afflicted at the death of those whom he was treating that he felt like giving up the practice altogether. Being rather a hard man in respect to morals, I was somewhat surprised, and made a note of the incident, which led to the belief that, as far as known, this feeling is characteristic of the profession.

The doctor ought to be humane as well as skilful, of course. But it is essential that he know the conditions of health and hygiene that are held to be legitimate to the profession of medicine, for in the effort to conduct the sick through the period of prostration he will need to know the influence that his surroundings exert upon him. At the time, however, he will find that habit has more to do with health than has climate or heredity, occupation, or, possibly, even contagion. It is, therefore, well for the physician to acquaint himself with the manner of living of the patient he attempts to cure, so as to marshal his forces to overcome the resistance of bad habits. For the effect of physical strain and abuse of appetite through vicious and unhygienic living makes it really imperative that the doctor possess the facts, since these habits induce a second nature in a man that makes it difficult, even for the most skilful physician, to command success in his practice.

We all know that the doctor carries a great weight of responsibility, for the lives of his patients are put in his keeping, and the friends of the sick relieve themselves as soon as he arrives and surrender their entire management of case, looking expectantly for the treatment decided on to bring speedy convalescence. Now, if the doctor's patient is a physical wreck, he ought to protect himself by knowing the fact, and, if need be, explaining matters to those most concerned.

It is held, then, as necessary to the success of the physician that he possess, as nearly as he can, a correct knowledge of the cause inducing the disease he is called to treat. And, besides that, he discriminates between the adverse influences of climate, water, air, etc., in respect to their effect upon health and the exhaustion uniformly consequent upon unhygienic personal habits, since it is quite apparent that the physical vices of the people break down the health far more than any one of these influences, or even all of them together, are likely to do.

Gymnasts and pugilists, from the effect of violent exertion and reckless living, are no exception to the rule. For these men, whom nature has endowed with superior muscular strength, are said, on the best of authority, to die before they reach old age, and often even in the very prime of life. Dr. Winship, the great American gymnast, evidently from overstrain, died while he was yet comparatively young. Charley Gallagher, a noted pugilist of this country, died of consumption at the age of thirty. Tom Sayers died of injuries received in a fight with John C. Heenan. Heenan himself died with consumption. Patsy Riordan, a man of almost perfect physique, died at the age of thirty six, a physical and also a mental wreck. Bob Riddle died in the same way, the flesh even dropping from the bones of his hands as soon as the breath had left his body. Ben Hogan, himself at one time a pugilist of note, is said to be the authority for these statements.

Indeed, the doctor is very seldom favored with the pleasure of treating a patient who has enjoyed perfect immunity from injuries brought on himself through unhygienic living up to the time he is called to take the case. This state of affairs seems to indicate the necessity of diagnosing the patient as well as the disease — a patient whose constitution was impaired before the development of disease. But, knowing this, he need not be discouraged. He can still do his best. To know how to treat a sick man who was well born, and who never afterward had an unhygienic habit, is one thing, and to conduct successfully the case of a broken-down man is another. Yet such is the recuperative power of the body that recovery from sickness may be looked for where the best sanitary methods are employed, with a judicious administration of medicines.

Again, it is known that by observing the rules by which health is restored and maintained, these have an important bearing on the cure of sick persons. And it is in this relation that hygiene becomes almost as important to the physician as it is to the patient, for the persistent violation of sanitary laws wears out the powers of resistance inhering in the vital force, and disease follows the prostration. And no doctor would expect to dislodge the disease so caused but by restoring an enforcement of the violated laws. Indeed, every one, even among the laity, must have noted the very great change that has taken place in the past fifty years or less in the practice of medicine, in the diminished confidence in mere medication, and the corresponding increase in sanitary and hygienic measures, in the management of disease. The fathers in the profession were certainly as intellectual as their sons are, but perhaps not as minute in their observations, and certainly not as business like and practical as their sons.

With due respect to the past, the facts show that it was by no means uncommon, even since our first birthday was celebrated, to ignore the laws of health in the sick-room and in the methods employed in the treatment of the sick. In those unhappy days the fever-parched patient cried in vain for a cold drink of water. The luxury of fresh air was also denied him. The windows and doors of his room were kept closed to prevent its entrance. And there the poor wretch lay, day and night, breathing the tainted atmosphere, until Death, in his pity of him, took him from his misery, where his friends, in their cruel management, could not torture him any longer. But the world moves, and thanks to common sense, the profession progresses.

Speaking of sanitation and the sick-room gives occasion to speak of some cases in this line of thought. A twelve-year-old boy, the son of a village merchant, was treated for an ordinary attack of fever. Water was denied him. Doors and windows were kept closed. Boiled corn, on the cob, was laid around him in the bed in order to sweat him. All this, and yet the poor boy died; and the doctor made terms with the injured parents by assuring them that the disease was a very malignant type of fever, while, in fact, the trouble was not so much in the

fever itself, as it was in the very malignant way the doctor had of treating it.

Another case, but in respect to its management quite an opposite one: A boy in the country lay sick with paludal, or March fever. He was very low, so that his relatives scarcely hoped for his recovery. The doctor saw the lad, and noticed that the clothing he had on and the bedding on which he lay were almost rotten with filth. The order was issued at once for a thorough cleaning up in this respect. With this sanitary movement enforced, under appropriate medical treatment he began to recover, and was soon well.

Then a young woman, said to have typho-malarial fever, was seen. The room in which she lay was darkened. The bed was located in one corner of the room. The air was stagnant about her, and fetid with the exhalations from her diseased body. It was ordered that the light be admitted, window and door kept open, and the bed removed for better ventilation. This done, the disease became quite tractable, and in two weeks she was comparatively well.

At another time a middle-aged man, of full habit, sick with a high grade of fever, of bilious type, was seen. Time of year, August; thermometer at  $96^{\circ}$  in the shade. Patient suffering severely from intense heat. It was ordered that wet sheets be kept hanging in the room. Thermometer went down to  $80^{\circ}$ . Patient became comfortable, and soon began to recover.

Speaking of the impairment of the physical condition by the vices common even among men of robust make admits of reference being made to the drink habit. And no matter what its apologists have to say for it, the drinking of intoxicating liquors is proven by the work it does to be a senseless and pernicious habit. And the physician is well aware that the custom of the times is to cover the disgrace of drunkenness in case of death from that cause, by saying that the drunkard came to his death by heart-failure, apoplexy, or fatty degeneration of the liver. The doctor is expected, of course, being the family physician, to frame a falsehood to save the respectability of the family connection. But no physician can afford to put his own honor on the market for any sum offered by his patrons to hide the voluntary degradation of their friends.

German to this is another matter well known to physicians who are often con-

sulted by parties interested. Advice is sought by a young man whose life has been "fast." He is, perhaps, twenty-six years of age. He is familiar with all the current vices, and is broken down by the drink habit and debauchery. He is rotten in morals and incurably diseased in body, and this beast of a man asks the doctor if it wouldn't be a good thing for him to straighten himself up and marry some healthy girl. Of course, it is eminently proper to advise the fellow to straighten himself up, but to advise him to marry a decent girl, a doctor would sooner advise a filthy leper to enter the circle of a healthy family. The doctor has, besides, quite a different class of cases, who consult him respecting the very delicate question of marriage, the party in quest of information being a young woman, as principal, with one or more female friends acting in her interest. The young woman is in the first stage of consumption. She wishes to know, through her friends, whether she would not enjoy increased bodily vigor, and an extension of life, as well, by marrying and becoming a mother. But the advice desired is not given by the judicious physician, for the reason that the offspring of a diseased mother is known to inherit less or more, the peculiar disabilities and defects of the parent that caused its being; and was there a court of equity for the benefit of children born of diseased parents—whether those parents were consumptive, syphilitic, or the offspring of a man in old age, or of one in the decay of senility, such parents would most justly be convicted and held guilty of inflicting wanton injuries entailed upon children whose life must always be one of pain and weakness. But then there is no such court, and there is no redress for children thus badly born; and the doctor must not and will not become a party to any such criminal proceedings.

But in recommending and employing for the benefit of his patients the best sanitary management, shall the doctor, therefore, advertise the sanitarium? We answer "No," for the reason that the sick well cared for do much better at home. Hereditary tendencies are made to cover a multitude of sins with the man of bad habits, but the doctor will not endorse this practice, either. He knows that what a man learns after he is born leads to the formation of his character, and that the

superior force of right culture and voluntary well doing will, under any circumstances, checkmate all the evil tendencies of heredity, provided the party in question is a sane man.

But as our paper is of sufficient length for the present purpose, we close by summing up what has been attempted here. Hygiene itself is the act of preserving health. Disease is deranged physiological action. The physician finds it to be a difficult and complex work to restore health, but in the employment of sanitary means it is comparatively easy to maintain it. Vital force is held to be in exact ratio to the chemical changes taking place in the body. This chemical action may be too rapid, too slow, or it may be perverted. The length and value of life depends on the maintenance of health, and that which concerns the physician in his treatment of the sick specially, is the fact that disease arising from violations of the laws of health is incurable as long as these violations continue.

In his original way of spelling, that is, of bad spelling, Josh Billings says: "If I was a doctor, and understood my business, I should doctor my patients and let the disease take care of itself. More folks are cured this way than any other." And so say we.

—G. F. Culmer, M.D., Odon, Ind., in *Lancet Clinic*.

**SOME POINTS IN THE STUDY OF URIC ACID.**—Physicians cannot study too closely the intricate problem of the phenomena of uric acid in the system. The London correspondent of the *Denver Medical Times* gives the following report, and comments upon Sir William Robert's Croonian Lectures, recently delivered upon the "Chemistry and Therapeutics of Uric Acid, Gravel and Gout:" He divides the morbid phenomena associated with uric acid into those having reference to gravel and calculus, and those having reference to gout. In the former, uric acid is thrown down in the free state from the urine, as concretions in the urinary channels; in the latter, uric acid is thrown down in a state of combination as sodium bi-urate, in the interior tissues of the body. In both cases the precipitated substance necessarily acts as a foreign body, and tends to cause inflammatory incidents and obstructions in the parts implicated. There are three orders of

uric acid salts, for, in addition to the neutral urates and bi-urates which have been long recognized, there exists a third order, namely, the quadri-urates; these last exist normally in human urine and in the urine of birds and serpents, and when uric acid is brought into relation with the bodily fluids, with blood, lymph and synovia, it enters into solution in the first instance as a quadri-urate. The quadri-urates may therefore be regarded as being, in a special sense, the physiological salts of uric acid, and as constituting the only form in which uric acid subsists in the living body in the normal state. Uric acid thus exists in the urine in combination with the alkaline bases. In perfect health, these combinations maintain their integrity, not only while the urine is detained in the urinary channels, but even for some considerable time after it has been discharged. This, however, is not always the case. In certain contingencies these combinations are prematurely decomposed, their uric acid is set free and is precipitated from the urine in the crystalline form. In calculus subjects this event takes place in the kidneys or bladder, and gives rise to the incidents of gravel; in less urgent cases, the precipitation takes place soon after the urine is voided, and perfectly normal urines betray the same tendency. The chemical explanation of the spontaneous precipitation of uric acid in urine is as follows: The uric acid always subsists in the unchanged urine as a quadri-urate, dissolved in a watery solution containing a number of mineral salts, of which the most important, in regard to the point under discussion, are the alkaline phosphates; these regulate in the main, the reaction of the urine, and oscillate between the monometallic forms or superphosphates, which have an acid reaction, and the dimetallic forms which have an alkaline reaction. We have, therefore, in an acid urine, the quadri-urate existing in the presence of water and of superphosphates; these conditions ensure the complete liberation of the uric acid; the first step in the process is the splitting up of the quadri-urate by the action of the urine into free uric acid and bi-urate. By this reaction half the uric acid is set free, but the bi-urate resulting from this reaction is immediately retransformed in the presence of superphosphates by a double decomposition into quadri-urate, and these alternating



reactions go on progressively till all the uric acid is set free. That precipitation of uric acid does not occur in the normal course till some time (twenty-four hours to seven days) after the urine has been voided, is due to the fact that the urine contains certain ingredients which greatly retard the water of it from breaking up the quadri-urates; the inhibitory agents are the urinary pigment, and the chlorides, phosphates and sulphates of potassium, sodium, ammonium, calcium and magnesium.

Poverty of the urine in saline matters is probably an influential factor in the disproportionate frequency of stone among the children of the poor, as compared with the children of the easier classes; on the other hand the well-known immunity enjoyed by sailors from stone and gravel depends probably on the great quantity of salt which seafaring men habitually consume with their food. Sir William Roberts considers that in the immense majority of cases of uric acid gravel in this country, the immediate determining cause is excessive acidity of the urine.

It is chemically impossible for uric acid to be deposited from an alkaline urine. A study of the normal oscillations of the urine at different periods of the day and night, leads to the inference that the liability to uric acid gravel rises to a dangerous intensity only during certain limited portions of the twenty-four hours. The character of the urine has been shown to be most affected by the digestion of food, by prolonged fasting and by sleep. Food increases its volume and depresses acidity; conversely, in prolonged fasting, and during the hours of sleep, which are also hours of fasting, the acidity of the urine reaches its highest point, and the flow of urine its lowest. Therefore, the period when there is most risk of precipitation in the kidneys is during the time of sleep, and especially in the early morning, during the two or three hours preceding breakfast. A study of these facts indicates that if we safeguard the night, the day may generally be left to take care of itself. In the milder cases a single full dose of the alkalizing agent, taken at bed time, suffices to prevent the recurrence of the colicky pains, and the discharge of uric acid concretions. For this purpose, 40-60 grains of citrate of potassium, dissolved in three or four ounces of water, is the best preparation to employ. In severer

cases a second, but smaller dose should be taken, about the middle period of the hours of sleep. In extreme cases, it is necessary to administer it during the day for a short time, but each meal acts as a dose of an alkali and also as a diluent, and in both these ways operates as a protective against uric acid precipitation. Subjects of gravel should, therefore, be warned not to allow too long an interval to elapse between their meals.

**MATTEISM: AN EXPOSURE**—We reprint herewith, from the *British Medical Journal*, the salient points of the report made by G. W. Potter, M.D., Chairman of the Mattei Investigation Committee. This is a complete exposure of the "bottled electricity—green, yellow, and variously colored," put forth by a quack, Count Mattei, of Italy:

For my part, however, I strove to introduce a stipulation that the Matteists should at least tell us what their remedy consisted of before we proceeded to further investigation, but this stipulation was not accepted. As some of our medical brethren have a little misunderstood the position and intentions of the committee, it may be desirable to state that we entered upon our duties merely as a committee of observation, not of supervision or direction. We were asked, not to treat cases, but to see and admit cures in the making, exactly as we might have been asked to see and admit the reality of the miracles at Lourdes, or of the wonders said to be wrought at Bethshan. To this there could be no ethical objection; nor, so far as I can see, was it in any way expedient. On the contrary, it was, under the peculiar circumstances, highly expedient, as the result has convincingly shown.

At the outset, the Matteists expressed themselves willing to accept, as subjects of treatment, cases of *bona fide* cancer by whomsoever introduced, provided they were still in the "first or second stage." To this limitation the committee made no objection. But when it began to be necessary to put these protestations into practice, a spirit of caution, not to say of extreme timidity, laid hold of the Matteists. Patient after patient was sent in, but declined by the cancer curers on one pretext or another. So much was this the case, that Mr. Lawson Tait was several times on the point of making a premature exposure of what he considered discredi-

table tactics. Even Mr. Stead himself began to think that he might have been deceived. This unlooked for hesitancy was an early indication that in Matteism all is not gold that glitters, and that the Matteists themselves are very well aware of the fact.

The most cautious calculator may sooner or later find himself in a dilemma; and that was exactly the position in which the Matteists found themselves. Mr. Stead, without at all intending it, had proved to be their most dangerous enemy. They were between Scylla and Charybdis. If they persisted in refusing every case sent in, Mr. Stead must expose them in the *Review of Reviews*; if they accepted cases which they could not cure, the believers in open or honorable methods of medicine, whose criticism the Matteists themselves had demanded with such well-simulated earnestness, would equally expose their failure to the light of day. Thus hemmed in on all sides, they were obliged to accept some cases for experiment; and, ultimately, they agreed to treat five patients out of a large number submitted to them—all women, all, with one doubtful exception, suffering from cancer of the breast, and all certified by competent surgeons, not members of the committee and not Matteists.

The committee appointed a graduate in arts and medicine of the University of Cambridge to act as their paid registrar. His duties were to watch the cases in detail, from week to week, and to make periodical reports. The members of the committee themselves also, in turn, regularly inspected the cases and noted their progress. It may be desirable here to state that the registrar, whose name I am not at liberty to mention, proved to be a most discreet, conscientious, and intelligent officer, and I much regret that he does not permit me to claim for him that honorable recognition of his important service to truth and good morals which every right-thinking medical man will be anxious to accord. To him it is largely due that the committee has been able to expose what they believe to be a worthless and impudent system of quackery.

Some of the patients accepted by the Matteists for treatment were at first located for a time in St. Saviour's Hospital, Osnaburgh street, but this arrangement proving impracticable, they were dealt with as out patients at one of the Matteist

depots. The committee, recognizing that they were observing an experiment in the utility of which they had no *a priori* faith, and which was being tried on five human beings, felt that they were bound to explain to the patients at the outset exactly how matters stood. The five women were therefore separately and solemnly informed that not one of the members of the committee or their registrar had any faith whatever in the value of the treatment which the Matteists were employing, and that the wisest thing for every one of them to do would be to seek aid at a hospital, or privately at the hands of a competent surgeon. This advice notwithstanding, all the patients elected to undergo the Mattei treatment.

The five cases were under observation for exactly a year. That period was quite long enough for definite changes of a favorable or unfavorable character to manifest themselves in all or most of the cases. At first the Matteists professed great confidence of favorable results. A few months after the commencement of the experiment Sir Morell Mackenzie unhappily became very ill, and the meetings of the committee were interrupted and not recommenced until after his death. The registrar, however, saw the patients every week, and I, being resident in London, was kept thoroughly conversant with the course of events. On the death of Sir Morell Mackenzie it seemed necessary either to strengthen the committee by the addition of other medical men resident in London or to dissolve it, as Mr. Lawson Tait lived at too great a distance from town to take any personal part in the work. Mr. H. A. Reeves, F.R.C.S.E., and Mr. John Hopkins, F.R.C.S., both consented to join the committee and to see the investigation carried to a conclusion.

Thus strengthened by competent practitioners resident in London, we felt that a thorough and conclusive inquiry could be conducted to completion. A visiting rota was agreed upon, and each member of the committee promised to attend weekly in turn, along with the registrar, at the depot, to inspect the cases. All this was faithfully carried out. When the Matteists discovered that they were dealing with men who intended to give them as much latitude as they pleased, but who were also minded to see what use they would make of it, they took fresh

and more obvious alarm. They wrote to the committee, through Mr Stead, representing that the treatment of the five cases was likely to be very prolonged and to cause much inconvenience to the members of the committee, as well as to delay indefinitely the publication of the report which was so anxiously looked for. They, therefore, proposed that, as they had several old cases on hand which they professed to have cured previously, the committee should see those ancient cases and publish their report upon them.

Mr. Stead expressed himself as thoroughly ashamed of his champions. He, unfortunately for himself, had been fully convinced that Matteism was an inspiration, and that Mattei and all his followers, but especially his medical followers, were loyal lovers of truth. Though the members of the committee sympathized deeply with the editor of the *Review of Reviews*, it is hardly necessary to state that they did not see their way to accept and report upon ancient cases exclusively vouched for by the testimony of the interested "cancer curers," and of which they had no opportunity of verifying the diagnosis at the outset or watching the progress. This was the second attempt made by the hardly pressed Matteists to escape from the plight into which they had brought themselves.

It now became obvious to all the parties concerned that the Matteists must either cure their cases or ignominiously give up the contest. But the cases could not be cured by any such means as were employed. On the contrary, the cancerous growths all continued to progress exactly as if no treatment whatever had been used. Some developed slowly, others more rapidly; but one, which had presented an unbroken surface at the outset, very soon became deeply ulcerated and excavated, and even the Matteists themselves were obliged to admit that "it seemed to be getting worse." Then happened an apparently irrelevant circumstance which the cancer curers seized upon, as a drowning man catches at a straw. One of the smaller medical papers, not knowing the real facts of the case, called in question the expediency of the inquiry. The members of the committee then publicly explained the *status quo*. Whereupon the Matteists wrote to Mr. Stead, pretending that one of the conditions of the inquiry had been violated;

and that, therefore, they declined to continue the treatment of the cases under the observation of the committee. Mr. Stead explained to them that they were under an absolute misapprehension; that no condition had been violated; that what had happened was that the committee had made a rule for its own guidance to the effect that nothing was to be published relating to the cases, without the authority of the committee; that the Matteists were not members of the committee and, therefore, had nothing to do with its rules; that, moreover, even the rule made by the committee for its own regulation had not been violated, inasmuch as nothing had been published relating to the facts of the inquiry, but only an explanation of the skeptical attitude of mind in which the committee had entered upon its work had been given to the medical profession; and that, moreover, the Matteists had known of that attitude of mind from the very first, and had professed that it was the one mental attitude of all others which they themselves had wished the committee to hold.

But Mr. Stead's protests were all in vain. In vain he told the Matteists that they had invited inquiry; in vain he urged that to convince believers was a superfluous task; what was necessary was to convince unbelievers; and that the unbelievers were ready and waiting to be convinced. In vain he urged upon them that if the five cases were to be ultimately really cured, even unbelievers could not deny the actual and material facts; and that, moreover, if they did, he (Mr. Stead) was there to convict them of falsehood, and to denounce them before the whole professional and non-professional worlds. In spite of these almost pathetic protests and adjurations, the Matteists positively and repeatedly declined to continue the treatment of the cases under the observation of the committee in any way whatever. This was the third attempt on the part of the Matteists to escape from the investigation they had directly courted. This final attempt at escape was successful. The Matteists took to flight, and ran, figuratively speaking, as fast and as far as their legs could carry them. Is any comment demanded upon facts like these?

What are the medical aspects of the Mattei treatment? There are no medical aspects of any kind. Matteism, in the deliberate judgment of the committee,

consists exclusively of vulgar, unadulterated, unredeemed quackery. Mr. Stokes analyzed the "electricities," the potions of the Matteists, and found them to yield no other reaction than that of plain distilled water. The results of administering these substances to patients entirely coincided with the results of chemical analysis. Water is the potent magician which, when taken in unquestioning faith, makes some of the deluded victims of Matteism feel that they are relieved of their pains. Even the poor creature whose cancerous growth is ulcerated and excavated, and whom the Matteists themselves admit to be "worse," persists in declaring herself improved, and pathetically anticipates the day of her perfect cure.

There is nothing more to be said. The story is as old as the world. The savage trusts to his amulet; the civilized man, both in the upper and lower circles, submits himself with childish, if not childlike, simplicity to the pretences of the quack. It is a strange world; but, such as it is, open and honorable medicine has to live and work in it, and must make the best it can of so wonderfully varied an environment.

THE ETIOLOGY AND PREVENTION OF DENTAL DECAY.—"Our only hope is that dentists may disseminate a knowledge of how best to combat these degenerative tendencies, and so enable us to resist the nervous strain and overcrowding which are credited with producing these evils, and unless they do so they will have failed to justify their elevation to professional rank."

The above sentence from your annotation on "Dental Medicine" in the *Medical Press* of July 6, is calculated to give a somewhat wrong impression as to the state of our knowledge regarding the etiology of dental caries. The subject in the dental profession is now a thrice told tale, but as it still remains very largely an unknown territory to the medical world, I will, with your permission, reiterate some of the more salient facts. But first I would personally express the obligation which I, in common with the whole dental profession, feel under to Sir J. Crichton Browne. He is one of the few physicians who have taken pains to master all essential matters concerning the etiology of dental caries, and to im-

press upon the medical world and the public the importance of tooth decay as a factor in influencing health.

It is impossible to name any disease of which more complete knowledge exists than of dental caries. For this knowledge we are most indebted to dental surgeons; although pathologists like, for instance, the late Professor Wedl, of Vienna, have done much to elucidate the whole subject and to establish correct opinions.

As will be presently seen evolutionary and hereditary forces are the prime motors in causation of caries, and if the dental profession is to be reproached for their impotence to control those forces, the world in general, and the scientific world in particular, must certainly share the reproach.

The cardinal facts to be grasped in understanding the nature of dental caries is, that it is entirely the effect of external causes in which true pathological processes—reaction in physiological elements—are entirely absent. Caries is due to the solvent effect of acids. These acids are mainly generated by fermentation in organic *débris* lodged upon the teeth. When the process of solution is once started—it in most instances starts in a patch of enamel, the seat of an inherent defect—the accumulation of *débris* on the roughened surface accelerates the process of solution. As soon as the enamel is perforated and the dentine reached, microorganisms proliferate along the tubules, and finding pabulum in the fibrils and organic basis of the tissue render still more rapid the course of the disease. These facts as to the nature of tooth decay are demonstrable, but I cannot now occupy your space with their full discussion. I may, however, summarize the main facts upon which determination of the nature of dental caries is based.

1. The anatomical characters of the teeth and the physiological qualities of enamel and dentine render it certain that these tissues, once fully calcified, are not the seat of physiological activity, and it is therefore impossible that they can be the seat of pathological action.

2. Except innate defects, which are extremely common, no morbid conditions are ever discoverable in the enamel or dentine save such as may be due to external causes.

3. Dentine and enamel would depend for their physiological activity—

vascular and nervous supply—upon the dental pulp; but caries in teeth deprived of their pulps, commonly done by operation, is identical with the disease in teeth with living pulps.

4. The presence of the destructive agents, acids and organisms, is in every instance verifiable, and their action upon the tissues can be readily discerned and followed.

5. Congestion and inflammatory phenomena in contiguous vascular connections are not necessary accompaniments of dental caries; inflammation of the dental pulp and periosteum are sequelæ to destruction of the hard tissues, but take no part in causation or progress of decay.

6. The predisposing causes of decay, the laws which govern its incidence and its rate of progress; and the macroscopical and microscopical appearances are all precisely the same in human teeth worn on plates as artificial substitutes and in living teeth.

Lastly, Decay identical in every respect with caries can be produced artificially out of the mouth by subjecting teeth to the influence of agents—organic matter moisture, and micro-organisms—at body temperature.

The artificial production of caries may be considered a crucial experiment by which the last shreds of doubt as to the essential character of the malady must be destroyed. Dr. Miller was the first to perform this experiment successfully, he was followed some time ago by myself and Mr. Pound. Sections of artificial caries are indistinguishable beneath the microscope from natural decay, and present all the phenomena, including the invariable presence of micro-organisms within the tubules and all the characteristic tissue changes.

The prime factor in the etiology of dental decay is formed of inherent structural defects and weaknesses in the tissues, and especially in enamel. Innate defects may affect the whole body of the tooth, or may be confined to certain spots in the enamel and dentine. The durability of the dental tissues varies, infinitely—in one individual the teeth withstand the extremest hard usage combined with neglect; in another they show traces of disease within the earliest years of childhood, and are destroyed sooner or later, even in spite of active treatment.

Enamel and dentine of such delicate teeth, examined microscopically, are found to present well-marked evidences of imperfect formation. The enamel, instead of being a densely hard homogeneous mass, is comparatively soft, owing to imperfect calcification, and porous in consequence of incomplete coalescence of its formative elements. It retains a fibrous character. The fibers are imperfectly blended; their transverse striæ are clearly evident, and they are often penetrated at their centers by tubes or small cavities. At parts the fibrous character may be altogether lost, the tissue consisting of an imperfectly united granular mass.

The dentine exhibits throughout its structure, and especially immediately beneath the enamel, patches of defective tissue similar in character to the granular layer, which in well-formed teeth exists only at the point of juncture with the cement. In the spaces within this defective tissue—sometimes called interglobular spaces—the tubes end, or they may run on and terminate in dilated extremities within the substance of the enamel.

Besides these structural imperfections another class of defects are equally common, namely, pits and fissures in the enamel and dentine. These vary in extent between minute cracks visible only under the microscope, and cavities visible to the naked eye. Sometimes defective enamel is completely honeycombed.

It does not by any means always happen that all these structural defects exist together in one tooth. Their degree and character vary infinitely. In teeth of otherwise good organization one or two pits or fissures, or small patches of defective tissue, are often found; whilst in teeth of generally inferior structure there are often to be discovered portions of still lower formation.

It is easy to perceive how these defects furnish lodgment for acid-forming substances, and render the teeth easily acted upon and destroyed. The fact that these innate defects vary infinitely in extent and character in teeth of different individuals, must especially be borne in mind, as it in great measure accounts for the extreme variation in the apparent susceptibility of individuals to the attacks of caries, and for the equally marked variation in the rate of progress of the disease in different instances. When enamel of the worst quality clothes dentine of equally

bad formation, caries once started runs a rapid course; on the other hand, the progress of decay will often be delayed when dentine of first-rate quality forms the bulk of a tooth, the enamel of which is ill made.

It is the exception to meet with an individual of a civilized race with every tooth perfect in structure; to find a set of teeth of otherwise good organization in which one or two pits or fissures or patches of ill made enamel are not discoverable, hence the fact that caries is so universally spread, few individuals passing through life without an attack in one or more teeth. The numbers among the population at present whose teeth are of the most defective structure is vast, but it is by no means proved that these numbers have been on the increase in later generations. To prove this would have needed observations on a large scale, and in the absence, until recent times of an educated dental profession, no such observations were attempted.

It can hardly be questioned that the evident inferiority of the whole apparatus of mastication—teeth, jaws and muscles—has been brought about in civilized races by the process of evolution.

It has been conclusively shown by Prof. Flower that there is gradual decrease in size of the jaws and teeth, through savage and primitive races to those of the highest civilized type, and there seems no reason to doubt, although it has not been demonstrated, that the teeth are of relatively inferior structure; but in this respect the dental development of the different civilized peoples seems to vary considerably<sup>1</sup>.

Ill-made dental tissues are often hereditary, and structural characteristics may often follow those of one parent only. Nothing is more common than to find in members of the same family teeth of one general type and quality, or teeth presenting, in exactly the same situations, flaws or patches of inferior formation. The effects upon the teeth of hereditary syphilis, and also of stomatitis occurring

<sup>1</sup> Prof. Flower shows, as a result of examination and measurement of many thousands of skulls, that there is a gradual diminution in the size of the teeth, from the anthropoid apes through the lower races of man to the European. He constructed a dental index, and in this index the average size of the teeth of the gorilla being represented by 50.8, the Tasmanian by 47.5, and other savage races holding intermediate positions; the European stands at 40.5.

during the progress of enamel calcification, have been sufficiently proved; and although the typical teeth of Hutchinson —the significance of which is unquestionable—are present in only a small proportion of undoubtedly syphilitic children, their occasional occurrence clearly shows the power of hereditary disease to influence the development of enamel and denture. An intimate connection between dental mal development and any other diathesis besides the syphilitic, cannot be demonstrated fully, yet there are some of these constitutional conditions with which badly-made teeth seem more or less associated. In this matter I am recording the results of my own observation alone. My experience goes to show that imperfect dental tissues are found in the majority of cases of scrofula.

With rickets I have found inherently defective teeth. I can in no way associate faulty tooth development either with rheumatic or gouty constitution. Indeed, with the latter both the jaws and teeth are often of unusually massive and solid character. In view of our limited knowledge of the causation of the degeneracy of enamel and dentine, what general measures can be suggested likely to lead to improvement in the quality of the tissues, and to aid in the prevention of dental caries. Such a question can be answered only in general form. Whatever tends to improve the physical development of a race should cause a relative improvement in the structural qualities of the teeth. The observance of the well-known general laws of health, we may be sure, will tend to produce good teeth in the race, it not in the individual, and among these laws we must insert one inculcating the use of articles of diet that shall give due exercise to the muscles of mastication, and prevent them, and the bones to which they are attached, from wasting.

It may next be asked, Can we by treatment influence beneficially the developing teeth of a fœtus in utero through a mother? In view of the fact that enamel once calcified is physiologically unalterable, the answer must be that little reliance can be placed upon the treatment specifically directed to that end, and we must depend mainly upon measures for the amelioration of the mother's general health, and the eradication of any definite morbid constitutional taint.

To show that defective teeth might occasionally result from deficient supply of the necessary pabulum through the mother, several cogent facts have been brought forward. It has been pointed out that in a pregnant woman the union of a fracture is slow, the inference being that the lime salts are required for the formation of the bones of the fœtus, and this is borne out by the fact that osteophytes and bony thickenings, sometimes present in the early months of gestation, become absorbed as pregnancy advances, and bone begins to form in the fœtus. In the presence of these facts, a rule may be established that in every case of dyscrasia or cachexia during pregnancy, and particularly where there is a tendency to atrophy and bony wasting, there should be administered suitable dietary, together with the preparations of lime and phosphorus to be found in the Pharmacopœia.

The exteriors of the crowns of all the temporary teeth from caries of which children suffer so much, are fully formed at birth; these teeth can, therefore, be influenced only through the mother. By this time the first permanent molars and the permanent incisors and canines are so far advanced in development that it is open to doubt whether treatment can have any effect upon the enamel. It is difficult to believe that treatment could influence cases in which a strong hereditary influence proceeding from the father gives a bias to dental development. A mother with good dental tissues will often bear children with defective teeth, having the closest resemblance in structure and form to those of the father, who may be perfectly healthy, and in whom this may be the sole physical defect.

When the child is born, syphilis and specific diseases will receive their appropriate treatment, whilst the well known rules of hygiene are enforced for the improvement of the general health. We are ignorant of the actual causation of defective enamel. It cannot be always due to lack of lime salts, or the whole skeleton would in every case be equally defective with the teeth. But as uncertainty exists it may be better to err on the right side—especially as the error would be harmless—and enforce the rule, that in every case in which ill-made tooth tissues are likely to appear, an attempt by diet and therapeutics should be made to supply to the developing tissues the mineral constituents

of which they may stand in need. This rule should, of course, especially be enforced in those diseases, such as rickets, in which the whole skeleton is ill-constructed. There is, of course, no difficulty in administering lime to an infant from birth.

To structural defects as a predisposing cause must be added a second; this is made up of the multitude of diseases accompanied by vitiation of the buccal secretions, or which tend to encourage formation of acid and accumulation of products of decomposition about the teeth.

It is impossible, particularly when both causes are present, to determine in any case the exact share which inherently weak enamel and vitiation of the secretions severally take in causation of caries, and when discussing the association of ill-made dental tissues with certain diatheses, it must, therefore, not be forgotten that some of these diatheses have as a common constant accompaniment vitiations of the secretions of the mouth. Thus one type of scrofulous subject—that with coarse features, muddy complexion, and long thick upper lip—has usually a chronic condition of congested buccal mucous membrane with secretion of acid mucus. Again, rickets is often preceded and attended by a virulent form of acid dyspepsia. In this way the prevalence of caries is to be accounted for among certain individuals or portions of the community whose physique and general health in other respects are not to a corresponding degree inferior, and whose dental tissues are not evidently of the worst structure. For example, the constant presence of dyspeptic troubles in some classes of factory operatives is enough to account for the rapid tooth decay from which they suffer. Dyspepsia due to sedentary habits and improper dietary—superabundance of coarse food and alcohol—is so common in some of these communities that it is regarded as a matter of course, and endured as one of those evils from which there is no escape.

The broad facts must be kept in view that without acid, without a septic condition of the secretions of the mouth, caries is impossible, and that acid capable of dissolving enamel—and of more rapidly dissolving enamel in proportion as the tissue is soft and ill-made—is always being formed in greater or less quantity in every mouth in which perfect cleanliness does not uniformly exist.

In combating this cause of caries, the patient's general health must first be considered. Probably every lapse from a perfect standard will be accompanied by a proportionate vitiation of the secretions of the mouth. But even with perfect health and perfect dental tissues, caries may appear if organic *débris* be allowed to remain and decompose in contact with the teeth. The first thing, therefore, in the prevention of caries is to insure cleanliness by the use of tooth-brush with proper tooth-powder. A tooth-pick properly employed, is important. The use of those of quill or wood only should be allowed; metal may scratch and break the enamel. They should be used at night, to clear away remains of food between the teeth before they receive their final brushing. Where the teeth are crowded, and are of delicate structure, the use of fine silk thread, passed between the teeth and rubbed to and fro, supersedes the tooth-pick.

In fevers and other diseases in which the patient is either too feeble or too listless to clean his teeth for himself, this should be done by an attendant. In such cases, and in all those in which great vitiation of the secretion is present, such as the zymotic fevers and the dyscrasia of pregnancy, extra means should be adopted, by use of antiseptic lotions, with which the teeth should be thoroughly brushed, as well as the mouth rinsed, to prevent putrefaction and fermentation in the deposits which form upon the teeth. Thorough cleansing of the teeth in this way will often suffice to prevent toothache, which in certain conditions—particularly during pregnancy—is clearly due to the irritation of carious cavities by the products of decomposition.

The third predisposing cause of caries is crowding and irregularity of the teeth, due to smallness and malformation of the maxillæ. These conditions are the characteristics of the civilized jaw, and their causation must be ascribed to the evolutionary changes already mentioned. Crowded and irregular teeth present nooks, cranies and narrow interstices, and make certain the prolonged lodgment of particles in contact with dental surfaces. It is in this way that caries is very often started in teeth of defective structure; and it will almost invariably be found, if caries begins where the tissues are of good quality,

that it attacks the teeth in those positions where particles of food become wedged during mastication.

In the treatment of crowding and irregularity of the teeth with a view to the prevention of caries, the most universally beneficial measure is the extraction of two or more of the most defective teeth from each jaw during the progress of second dentition. This should never be done before the second molars are in place—about the twelfth year. The effect of the operation is to cause all the teeth gradually to spread equally apart, and this goes on in crowded jaws until the space formerly occupied by the largest molars becomes obliterated.—Sewell, *Med. Press*.

ABDOMINAL MASSAGE.—E. E. Ivanoff (*Vratch*, No. 20, 1892.) suggests a modification of Sahli's method of abdominal massage. Instead of a cannon ball, he uses a hollow wooden or celloidin globe filled with shot, which is poured into the cavity through a hole furnished with a stopper. The quantity of shot should vary according to the patient's age, averaging about 1 lb. for a child under 2 years, 2 lbs. for 2 to 4 years old, 3 lbs. for other children, and up to 4 or 5 lbs. for adults. The author used the method successfully in a series of cases of very obstinate chronic constipation in children, in whom prolonged treatment with laxatives and enemata had utterly failed. The *technique* is exceedingly simple; the ball is rolled up and down along the course of the large bowel for two or three minutes, being pushed with a gentle touch of the palm of the hand. The procedure should be repeated twice daily. The author thinks this form of massage will prove beneficial, not only in atonic constipation, but in (1) intestinal stricture following dysentery, typhoid fever, etc.; (2) chronic infiltration about the womb and its appendages; (3) atony of the bladder; (4) neuralgias of limbs. In comparison with Sahli's metal globes, the wooden or celloidin balls are said to offer the following advantages: (a) They do not cause any unpleasant sensations of chill; (b) their weight can be easily varied according to the circumstances of the case; (c) they are very cheap.—*Brit. Med. Jour.*

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**CHRONIC GOUT.**—The following was a favorite of the late Dr. A. B. Garrod :

R.—Ext. colchici acet.,  
 Ext. rhei,  
 Ext. aloes socot.....ãã vj.  
 Ext. belladonnæ..... gr. j.  
 M.—Et. ft., pil. No. vi.  
 Sig. Take one at night, twice a week.

—Med. Review.

News and Miscellany.

DR. W. THORNTON PARKER has removed to 2220 Wabash avenue, Chicago, Ill., from Salem, Mass.

WEEKLY Report of Interments in Philadelphia, from August 13 to August 20, 1892 :

CAUSES OF DEATH.	Adults.	Minors.	CAUSES OF DEATH.	Adults.	Minors.
Abscess.....	1	1	Inanition.....	1	18
Alcoholism.....	4	1	Influenza.....	1	1
Apoplexy.....	11	1	Inflam'n bladder....	1	1
Bright's disease.....	10	1	"    brain.....	1	7
Cancer.....	6	2	"    bronchi.....	4	1
Carbuncle.....	2	2	"    kidneys.....	2	1
Casualties.....	4	3	"    larynx.....	1	1
Congestion of the brain.....	7	1	"    liver.....	1	1
Congestion of the lungs.....	4	2	"    lungs.....	8	2
Cholera infantum.....	2	49	"    pericard'm.....	1	1
"    morbous.....	2	2	"    peritone'm.....	1	1
Cirrhosis of the liver.....	2	2	"    pleura.....	1	1
Consumption of the lungs.....	45	5	"    s. & bowels.....	5	5
Consumption of the bowels.....	1	2	"    heart.....	1	1
Colic.....	1	2	Insanity.....	2	2
Convulsions.....	1	14	Marasmus.....	1	32
Collapse of the lungs.....	2	2	Measles.....	1	1
Cyanosis.....	6	6	Obstruction of the bowels.....	1	1
Debility.....	5	3	Old age.....	11	1
Diabetes.....	1	1	Paralysis.....	2	2
Diarrhoea.....	5	4	Rheumatism.....	1	1
Diphtheria.....	1	7	Septicæmia.....	1	1
Disease of the heart.....	14	3	Sore mouth.....	1	1
"    liver.....	1	7	Softening of the brain.....	2	2
"    spine.....	1	3	Suicide.....	7	8
Drowned.....	3	2	"    sunstroke.....	1	1
Dropsy.....	1	3	Syphilis.....	1	1
Dysentery.....	5	2	Tabes mesenterica.....	1	3
Epilepsy.....	1	1	Teething.....	2	2
Erysipelas.....	1	1	Tumor.....	2	1
Fever, malarial.....	1	1	Ulceration of the stomach.....	1	1
"    puerperal.....	1	1	Uremia.....	5	1
"    typhoid.....	4	1	Whooping-cough.....	1	7
Hemorrhage.....	1	1	Total.....	207	206
Homicide.....	1	1			

OF THE FOREGOING THERE WERE :

Under 1 year.....	135	From 50 to 60.....	34
From 1 to 2.....	34	"    60 to 70.....	26
"    2 to 5.....	13	"    70 to 80.....	30
"    5 to 10.....	11	"    80 to 90.....	7
"    10 to 15.....	2	"    90 to 100.....	1
"    15 to 20.....	11	"    100 to 110.....	1
"    20 to 30.....	40	Total.....	413
"    30 to 40.....	45		
"    40 to 50.....	23		

Males, 218 ; females, 195 ; boys, 107 ; girls, 99.  
 The number of deaths, compared with corresponding week of 1891 and of last week, was as follows :  
 Week ending August 22, 1891 was 429.  
 Week ending August 13, 1892, was 504.  
 By order of the Board of Health,

Moses Veale,  
 Health Officer.

Attest :  
 J. V. P. Turner,  
 Chief Registration Clerk.

ARMY, NAVY AND MARINE HOSPITAL SERVICE.

Changes in the Medical Corps of the U. S. Navy for the week ending August 20, 1892.

ASHBRIDGE, RICHARD, Passed Assistant-Surgeon. Detached from Navy Yard, New York, and wait orders.

Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, U. S. Army, from August 7 to 22, 1892.

Leave of absence for one month, to take effect about September 1, 1892, is granted Captain Adrian S. Polhemus, Assistant-Surgeon, U. S. Army.

The leave of absence granted Colonel Charles Page, Assistant-Surgeon General, U. S. Army, is extended one month.

The extension of the leave of absence granted Captain William C. Gorgas, Assistant-Surgeon, U. S. Army, is further extended twenty days.

Leave of a sence for twenty-one days, to take effect upon the completion of the bond of Captain Harry O. Perley, Assistant-Surgeon, U. S. Army, is granted Colonel Charles T. Alexander, Assistant-Surgeon General, U. S. Army.

The leave of absence on surgeon's certificate of disability granted Captain Marcus E. Taylor, Assistant-Surgeon, U. S. Army, is extended four months on surgeon's certificate of disability.

Leave of absence for four months is granted Major Charles Smart, Surgeon, U. S. Army.

Captain Richard W. Johnson, Assistant-Surgeon, U. S. Army, is relieved from duty at Fort Bayard, New Mexico, and ordered to Fort Bowie, Arizona Territory, for duty at that station, relieving First Lieutenant Philip G. Wales, Assistant-Surgeon.

Lieutenant Wales, on being relieved by Captain Johnson, is ordered to Fort Bayard, New Mexico, for duty at that station.

Captain Walter Reed, Assistant-Surgeon, U. S. Army, upon the arrival of First Lieutenant Charles F. Mason, Assistant-Surgeon, at Fort Snelling, Minnesota, will be relieved from duty at that station, and will report in person to the commanding general, Department of Dakota, for duty as Attending Surgeon and Examiner of Recruits at the headquarters of that department.

First Lieutenant Paul Shillock, Assistant-Surgeon, U. S. Army, now on temporary duty at San Carlos, Arizona Territory, is relieved from duty at Fort Grant, Arizona Territory, and assigned to permanent duty at San Carlos, Arizona Territory, relieving First Lieutenant Nathan S. Jarvis, Assistant-Surgeon.

Lieutenant Jarvis, on being relieved by Lieutenant Shillock, is ordered to Fort Apache, Arizona Territory, for duty, relieving Captain Louis M. Mans, Assistant-Surgeon.

Captain Mans, on being relieved by Lieutenant Jarvis, is ordered to Whipple Barracks, Arizona Territory, for duty.

Lieutenant-Colonel Charles R. Greenleaf, Deputy Surgeon-General, now at Montpelier, Vermont, will proceed to Plattsburg Barracks, N. Y., on business connected with the Medical Department, and on completion thereof will return to Montpelier.

*Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine Hospital Service for the three months ending August 20, 1892.*

BAILHACHE, P. H., Surgeon. Granted leave of absence for fourteen days. May 25, 1892.

PURVIANCE, GEORGE, Surgeon. Granted leave of absence for seven days. August 9, 1892.

VANSANT, JOHN, Surgeon. Granted leave of absence for thirty days. August 13, 1892.

AUSTIN, H. W., Surgeon. Granted leave of absence for thirty days. June 21, 1892.

STONER, G. W., Surgeon. To proceed to Port Huron, Sault Ste. Marie, Saginaw, Marquette, Mich.; Duluth, Minn.; and Superior, Wis., as inspector. July 11, 1892.

MEAD, F. W., Surgeon. Granted leave of absence for thirty days. July 11, 1892.

CARTER, H. R., Surgeon. To proceed to Chicago, Ill., as inspector of unserviceable property. August 16, 1892.

WASDIN, EUGENE, Passed Assistant-Surgeon. Granted leave of absence for twenty-eight days. July 21, 1892.

WHITE, J. H., Passed Assistant-Surgeon. Granted leave of absence for thirty days. August 13, 1892.

CARRINGTON, P. M., Passed Assistant-Surgeon. Granted leave of absence for twenty-seven days. August 13, 1892.

MCINTOSH, W. P., Passed Assistant-Surgeon. Granted leave of absence for thirty days. July 8, 1892.

MAGRUDER, G. M., Passed Assistant Surgeon. Granted leave of absence for seven days. August 18, 1892.

WOODWARD, R. M., Passed Assistant-Surgeon. Granted leave of absence for twenty-five days. August 1, 1892.

STONER, J. B., Passed Assistant-Surgeon. Granted leave of absence for twenty-six days. August 13, 1892.

CONDICT, A. W., Assistant-Surgeon. Granted leave of absence for twenty-six days. July 21, 1892.

HUSSEY, S. H., Assistant-Surgeon. To proceed to Galveston, Texas, for temporary duty. August 11, 1892.

WERTENBAKER, C. P., Assistant-Surgeon. To proceed to Pittsburg, Pa., for temporary duty. August 9, 1892.

PERRY, J. C., Assistant-Surgeon. To proceed to Charleston, S. C., for temporary duty. July 19, 1892.

SMITH, A. C., Assistant-Surgeon. Granted leave of absence for twenty-eight days. August 13, 1892.

ROSEMAN, M. J., Assistant Surgeon. To proceed to Cairo, Ill., for temporary duty. July 27, 1892.

COPER, I. E., Assistant-Surgeon. To proceed to Norfolk, Va., for temporary duty. June 10, 1892. Granted leave of absence for twenty-three days. August 6, 1892.

EAGER, J. M., Assistant-Surgeon. To proceed to Evansville, Ind., for temporary duty. August 11, 1892.

NYDEGGER, J. A., Assistant-Surgeon. Assigned to temporary duty at Baltimore, Md. July 6, 1892.

STEWART, W. J. S., Assistant-Surgeon. To proceed to New York for temporary duty. July 6, 1892. To proceed to Wilmington, N. C., for temporary duty. July 19, 1892. To proceed to Savannah, Ga., for temporary duty. August 9, 1892.

PROMOTIONS.

STONER, J. B. Commissioned as Passed Assistant-Surgeon. June 30, 1892.

GUITERAS, G. M. Commissioned as Passed Assistant-Surgeon. July 27, 1892.

APPOINTMENTS.

NYDEGGER, JAMES A., M.D., of Maryland. Commissioned as Assistant-Surgeon. July 1, 1892.

STEWART, WILLIAM J. S., M.D., of Pennsylvania. Commissioned as Assistant-Surgeon. June 30, 1892.

## STEARNS' CASCARA AROMATIC

Is a fluid extract (not a cordial, syrup or other dilute preparation) of prime and selected two year old bark. (Fresh bark contains a ferment which produces griping.)

Cascara Aromatic is sweet in taste (which children and women especially appreciate) instead of being bitter, as is the ordinary fluid extract, powerful (its dose is on'y  $\frac{1}{4}$  to 1 fluidrachm) yet gentle in effect, and in addition does not gripe. (This next to its taste, is its most valuable property, as ordinary bitter fluid extracts do.)

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